

Notice of Allowability

Application No.

10/564,214

Examiner

Tuan Quach

Applicant(s)

HUETING ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.
2. ☒ The allowed claim(s) is/are 1-13.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 1/9/06
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


Tuan Quach
Primary Examiner

EXAMINER'S AMENDMENT AND REASONS FOR ALLOWANCE

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The following headings are inserted in the specification to conform to U.S. practice as provided in 37 CFR 1.77(b).

In the specification:

On page 1 after the title, on the next line:

- - BACKGROUND OF THE INVENTION

1. Field of the Invention - - is inserted as headings.

On page 1 line 8, - - 2. Description of Related Art - - is inserted as heading.

On page 10, between lines 25 and 26, - - BRIEF SUMMARY OF THE INVENTIONS - - is inserted as heading.

On page 15, line 28, - - BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS - - is inserted as heading.

On page 18, line 7, - - DETAILED DESCRIPTION OF THE INVENTION - - is inserted as heading.

In the drawings: The drawings are objected to for the following reason.

Correction is required.

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. This is in accordance with applicant's statement in the specification page 2 lines 27-29 indicating that Fig. 1 shows a schematic cross-section of a known trench gate form of vertical MOSFET power transistor semiconductor device. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The following is an examiner's statement of reasons for allowance:

Claims 1-11 are allowed primarily because the prior art of record does not teach or suggest the claimed invention as claimed in claim 1 regarding a vertical power transistor trench-gate semiconductor device having a trench network extending into a semiconductor body and surrounding a plurality of closed transistor cells, wherein the trench network comprises segment trench regions adjacent sides of the transistor cells and intersection trench regions adjacent corners of the transistor cells, each transistor cell has a source region and a drain region which are vertically separated by a channel-accommodating body region adjacent a segment trench region, wherein the intersection trench regions each include insulating material which extends from the bottom of the

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intersection trench region with a thickness which is greater than the thickness of the insulating material at the bottom of the segment trench regions, wherein the greater thickness of the insulating material extending from the bottom of the intersection trench regions is effective to increase the drain-source reverse breakdown voltage of the device. Claims 2-11 and 12-13 further depend from claim 1 thus include all the claimed limitations therein are allowed also for the reasons applicable to claim 1 delineated above.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Tuan Quach whose telephone number is 571-272-1717. The examiner can normally be reached on M-F from 8:30 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Sue Purvis can be reached on 571-272-1236. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tuan Quach
Primary Examiner